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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/709,326	04/28/2004	Emily F. Gallagher	BUR920030170US1	3325
29505	7590	08/12/2005	EXAMINER	
DELIO & PETERSON, LLC 121 WHITNEY AVENUE NEW HAVEN, CT 06510			CHANG, AUDREY Y	
			ART UNIT	PAPER NUMBER
			2872	

DATE MAILED: 08/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/709,326

Applicant(s)

GALLAGHER ET AL.

Examiner

Audrey Y. Chang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 April 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 4/04; 5/04.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: ____.

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the “first thickness”, the “second thickness” and the “third thickness” recited in claims 1, 18 and their respective dependent claims must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

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3. **Claims 1 and 5 are rejected under 35 U.S.C. 112, first paragraph**, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The specification and the claims never teach the pellicle, (as the final product), to have a first, second and third thickness in particularly the third thickness being different from the first thickness. The pellicle as disclosed in the specification only has *two* regions of different thickness.

Claim Objections

4. **Claims 1-29 are objected to because of the following informalities:**

(1). Claims 1 and 18 recites the “first thickness”, the “second thickness” and the “third thickness” without giving a positive relationship between these thickness that make the claims confusing. Since the specification discloses that the pellicle only has two regions of different thickness, it is therefore not clear how to relate these three thickness to the two actual thickness concerning the pellicle.

(2). The phrase “original thickness” recited in claims 3-4 is confusing since it is not clear what is considered to be “*original* thickness”. The applicant is respectfully noted the claims are *article* claims which is concerning to the *final product* of the pellicle. It is not clear if this suggests that some how the pellicle will change its thickness after the final product is made? How could such be possible?

(3). The phrase “at least thick enough” recited in claims 9 and 24, the phrase “sufficient rigid” recited in claims 10 and 19 are confusing and indefinite since the specification fails to provide the degree concerning the “thickness” and the degree concerning the “rigidity” to satisfy the stated properties or conditions, these phrases are therefore interpreted in the broadest sense.

(4). The term “exposing” recited in claim 14 is confusing since it is not clear it is “exposed” to what?

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(5). The phrase “a rework process” recited in claim 29 is confusing since it is not clear what is considered to be this “rework process”. What is being reworked and what “work” are involved in this “rework process”?

Appropriate correction is required.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. **Claims 1-4, 6, and 9-15 are rejected under 35 U.S.C. 102(b) as being anticipated by the patent issued to Satoh et al (PN. 5,847,489).**

Satoh et al teaches a *quartz covering plate* (102, Figure 2a) that is comprises a *transparent plate*, inherently has a first thickness, having a *recessed portion* having a *second thickness*. The transparent quartz covering plate has a *perimeter entirely surrounding* the recessed portion with a *third thickness*. The transparent quartz covering plate has *monolithic or single-piece structure*, (please see Figure 2a, column 6, lines 59-64).

This reference has met all the limitations of the claims, however it does not teach explicitly that the covering plate is an optical pellicle. But since optical pellicle is nothing but a *covering plate* and the *covering plate* of Satoh et al has the *same structure* as the structure limitations claimed for the pellicle in the claims. The feature concerning “optical pellicle” is therefore considered as an intended use. It has

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been held that a recitation with respect to the manner in which a claimed apparatus is *intended to be employed* **does not differentiate** the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. Ex parte Madham, 2 USPQ2d 1647 (1987).

With regard to claim 2, Satoh et al teaches that the covering plate is made of quartz.

With regard to claims 3-4, it is inherently true that the transparent plate and the perimeter region of the transparent plate has the "*original thickness*" which is the thickness of the plate not at the recessed portion.

With regard to claim 6, the quartz material inherently is transparent to radiation of 157 nm wavelength.

With regard to claim 9, the thickness of the recessed portion must be "thick enough" since this reference does not teach that any sagging of the recessed portion taking place from any applied force on it.

With regard to claim 10, Satoh et al teaches that the covering plate is made of quartz, which is the same claimed material. This means the material must be sufficient rigid to prevent the damage and distortion, since rigidity is an inherent property.

With regard to claim 11, the recessed portion of the quartz covering plate extended from a single surface of the plate to a depth within the plate, (please see Figure 2a).

With regard to claim 12-13, Satoh et al teaches that the covering plate is a *single piece* made of a single material -- quartz, which therefore has a single thermal expansion.

With regard to claim 15, Satoh et al teaches that the covering quartz plate has a rectangular shape.

This reference has therefore anticipated the claims.

7. **Claims 1-4, 6, 9-15, 18-22, 24-25 are rejected under 35 U.S.C. 102(b) as being anticipated by the patent issued to Nistler et al (PN. 6,410,191).**

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Nistler et al teaches an *optical plate* (20 or 30, Figures 1B and 1C) that is comprises a *transparent substrate* (12), inherently has a first thickness, having a *recessed portion* (22) having a *second thickness*. The transparent optical plate has a *perimeter entirely surrounding* the recessed portion with a *third thickness*. The transparent optical plate has *monolithic or single-piece structure*, (please see Figures 1B and 1C, columns 1-2).

This reference has met all the limitations of the claims, however it does not teach explicitly that the optical plate is an optical pellicle. But since optical pellicle is nothing but an optical *plate* and the *optical plate* of Nistler et al has the *same structure* as the structure limitations claimed for the pellicle in the claims. The feature concerning “optical pellicle” is therefore considered as an intended use. It has been held that a recitation with respect to the manner in which a claimed apparatus is *intended to be employed* **does not differentiate** the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. Ex parte Madham, 2 USPQ2d 1647 (1987).

With regard to claim 2, Nistler et al teaches that the transparent substrate is made of quartz, (please see column 1, lines 21-22).

With regard to claims 3-4 and 21-22, it is inherently true that the transparent plate and the perimeter region of the transparent plate has the “*original thickness*” which is the thickness of the plate not at the recessed portion.

With regard to claim 6, the quartz substrate material inherently is transparent to radiation of 157 nm wavelength.

With regard to claims 9 and 24, the thickness of the recessed portion must be “thick enough” since this reference does not teach that any sagging of the recessed portion taking place from any applied force on it.

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With regard to claims 10 and 19, Nistler et al teaches that the optical plate is made of quartz, which is the same claimed material. This means the material must be sufficient rigid to prevent the damage and distortion, since rigidity is an inherent property.

With regard to claim 11, the recessed portion of the quartz optical plate extended from a single surface of the plate to a depth within the plate, (please see Figure 2a).

With regard to claim 12-13, Nistler et al teaches that the optical plate is a *single piece* made of a single material -- quartz, which therefore has a single thermal expansion.

With regard to claim 15, Nistler et al teaches that the optical plate has a rectangular shape. (please see Figures 1B and 1C, columns 1-2).

With regard to claims 18 and 25, Nistler et al teaches that optical element has the recessed portion formed in the quartz substrate plate is formed by, *providing* transparent quartz substrate with the first thickness, providing *a mask*, formed by patterned chromium trace (24 or 32) on a first side of the substrate to cover only the perimeter portion of the substrate with regard to the intended recessed portion placed at the center of the patterned chromium trace, and removing the *uncovered* transparent substrate material defined by the patterned mask until the desired second thickness of the recessed portion is reached. The chromium trace or the mask is then removed, (please see column 1-2).

With regard to claim 20, Nistler et al teaches that the optical plate is a *single piece* made of a single material -- quartz, which therefore has a single thermal expansion. The quartz substrate material is inherently transparent to radiation of 157 nm wavelength.

This reference has therefore anticipated the claims.

8. Claim 30 is rejected under 35 U.S.C. 102(e) as being anticipated by the patent issued to Shu (PN. 6,842,228).

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Shu et al teaches a method for protecting a photomask during photolithography process where a *reticle* (130 or 160, Figures 1 and 3-4) served as the *photomask* is provided and a monolithic *pellicle* (110) is *attaches* to said photomask for protecting the photomask from subsequent photolithography process, (please see Figures 1 and 3-4 and columns 2-).

This reference has therefore anticipated the claim.

Claim Rejections - 35 USC § 103

9. **Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Satoh et al OR Nistler et al.**

The *monolithic* covering plate or *monolithic* optical plate taught by **Satoh et al** or **Nistler et al** as described for claim 1, respectively, above has met all the limitations of the claim.

These references however do not teach that the third thickness is less than the first thickness. But such feature is **not** supported by the specification since all of the optical pellicle disclosed has only two different thickness not three. This feature therefore cannot be examined with detail here.

10. **Claims 7 and 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Satoh et al in view of the patent issued to Okada et al (PN. 6,744,562).**

The *monolithic* covering plate taught by **Satoh et al** as described for claim 1 above has met all the limitations of the claims.

This reference does not teach explicitly that the monolithic covering plate has the claimed thickness and a plurality of openings traversing the perimeter of the of the transparent plate for introducing gas flow. **Okada et al** in teaches an optical pellicle having a pellicle frame wherein the frame has a size about 3 mm, (please see column 4, lines 39-40). **Okada et al** further teaches that the pellicle

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frame has a plurality of vent holes (1, Figure 1) formed traversing the frame or perimeter of the pellicle for allowing gas flow in and out of the pellicle region when the pellicle is mounted on a photomask, (please see Figure 1, column 3, lines 16-58). With regard to claim 17, the vent holes could be circular. It would then have been obvious to one skilled in the art to apply the teachings of Okada et al to modify the monolithic covering plate to have the desired the size and the vent holes for the benefit of making it capably function as an optical pellicle for the benefit of covering up the photomask to protect the photomask during the lithographic process.

11. **Claims 7, 16-17, 23 and 27-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Nistler et al in view of the patent issued to Okada et al (PN. 6,744,562).**

The *monolithic* optical plate taught by Nistler et al as described for claims 1 and 18 above has met all the limitations of the claims.

This reference does not teach explicitly that the monolithic optical plate has the claimed thickness and a plurality of openings traversing the perimeter of the of the transparent plate for introducing gas flow. **Okada** et al in teaches an optical pellicle having a pellicle frame wherein the frame has a size about 3 mm, (please see column 4, lines 39-40). Okada et al further teaches that the pellicle frame has a plurality of vent holes (1, Figure 1) formed traversing the frame or perimeter of the pellicle for allowing gas flow in and out of the pellicle region when the pellicle is mounted on a photomask, (please see Figure 1, column 3, lines 16-58). With regard to claim 17, the vent holes could be circular. It would then have been obvious to one skilled in the art to apply the teachings of Okada et al to modify the monolithic optical plate to have the desired the size and the vent holes for the benefit of making it capably function as an optical pellicle for the benefit of covering up the photomask to protect the photomask during the lithographic process. The detaching step is implicitly met by the combined teachings of Nistler et al and Okada et al.

With regard to claim 23, these references do not teach explicitly to include the step of adjusting distance between the pellicle and the photomask as claimed. However such step is either implicitly included by making the frame has size about 3 mm or an obvious modification to one skilled in the art for the benefit of making the pellicle with frame having the optimum distance with respect to the photomask.

12. **Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over the patents issued to Satoh et al and Okada et al as applied to claims 1 and 7 above, and further in view of the patent issued to Shu (PN. 6,842,228).**

The *monolithic* covering plate taught by Satoh et al in view of the teachings of Okada et al as described for claims 1 and 7, above have met all the limitations of the claim.

These references however do not teach explicitly that the thickness of the recessed portion or pellicle layer is of the claimed values. But is it known in the art that the thickness of the pellicle has to be comparable to the wavelength of the light intended to be used. **Shu** in the same field of endeavor teaches explicitly that for exposure laser source of wavelength 157 nm the thickness of the pellicle should be 300 to 1000 microns, (please see column 1, lines 48-52). It would then have been obvious to one skilled in the art to modify the thickness of the recessed portion to have the disclosed thickness for the benefit of making it best worked in the lithographic process using 157 nm laser light source.

13. **Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over the patents issued to Nistler et al and Okada et al as applied to claims 1 and 7 above, and further in view of the patent issued to Shu (PN. 6,842,228).**

The *monolithic* optical plate taught by Nistler et al in view of the teachings of Okada et al as described for claims 1 and 7, above have met all the limitations of the claim.

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These references however do not teach explicitly that the thickness of the recessed portion or pellicle layer is of the claimed values. But is it known in the art that the thickness of the pellicle has to be comparable to the wavelength of the light intended to be used. **Shu** in the same field of endeavor teaches explicitly that for exposure laser source of wavelength 157 nm the thickness of the pellicle should be 300 to 1000 microns, (please see column 1, lines 48-52). It would then have been obvious to one skilled in the art to modify the thickness of the recessed portion to have the disclosed thickness for the benefit of making it best worked in the lithographic process using 157 nm laser light source.

14. Claim 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Nistler et al.

The *monolithic* optical plate taught by Nistler et al as described for claims 1 and 18 above has met all the limitations of the claims.

With regard to claim 26, this reference does not teach explicitly of the steps of planarizing the recessed portion to have optically flat surface and of planarizing the opposed second surface of the transparent substrate plate. However Nistler et al does teach that the recessed portion and the opposite side surface of the substrate (12) having planar surfaces. Such steps are therefore either implicitly included in the disclosure or an obvious modification to one skilled in the art for the benefit of making the optical plate with optically flat surfaces to eliminate any unwanted scattering of the light at the surfaces.

Contact Information

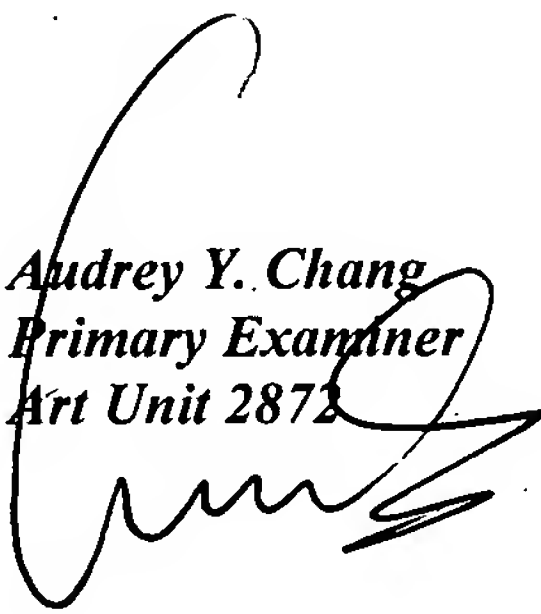
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Audrey Y. Chang whose telephone number is 571-272-2309. The examiner can normally be reached on Monday-Friday (8:00-4:30), alternative Mondays off.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Dunn can be reached on 571-272-2312. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Audrey Y. Chang
Primary Examiner
Art Unit 2872



A. Chang, Ph.D.